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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Giacomo Pollarolo

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EXAMINER

NGUYEN, ANDREW H

ART UNIT

PAPER NUMBER

3741

NOTIFICATION DATE

DELIVERY MODE

05/07/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/596,497	Applicant(s) POLLAROLO, GIACOMO	
	Examiner ANDREW NGUYEN	Art Unit 3741	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 February 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 8-10 is/are rejected.
- 7) ☒ Claim(s) 7 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 February 2009 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 7 is objected to because of the following informalities: "... configured to bear axially upon one the other of said cup ..." should be "... configured to bear axially upon the other of said cup ...". Also, "... outside on the former one on the side opposite to said combustion chamber" is confusing. Examiner suggests labeling a first and second cup -shaped tubular body and then defining how they are coupled.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

3. Claims 1 rejected under 35 U.S.C. 102(a) as being anticipated by US 2004/0248053 to Benz et al (Benz).

Regarding claim 1:

Benz teaches a gas turbine combustor (see title) that uses at least one burner (inherent – must be upstream of the combustion chamber) and a damping system (see Fig 5, resonators 5) with Helmholtz resonators with a pre-set volume (5) and a neck (6) that connects the volume and the combustion chamber (1). The neck is distant from the upstream portion with the burner (see Fig 5 - resonators are mounted on the downstream combustor wall).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2 and 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2004/0248053 to Benz et al (Benz) in view of US 5,373,695 to Aigner et al (Aigner).

Regarding claim 2:

Benz teaches at least one resonator set in a circumferential position (see Fig 5; para 43) about the combustion chamber. Benz fails to teach the resonator housed within an air case and an annular combustion chamber. However, Aigner teaches using a resonator within an annular combustor and an air case outside of the resonator. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the resonators of Benz in an annular combustor and within an air case as a matter of obvious design choice, as taught by Aigner.

Regarding claims 8 and 9:

Benz fails to teach the casing and the neck of the resonator having cylindrical symmetry and axes of symmetry that are aligned with one another. However, Helmholtz resonators with the casing and neck having aligned axes of symmetry was well known in the art, as taught by Aigner (see Fig 3; resonators 21 have necks at the

Art Unit: 3741

center of the casing). It would have been obvious to one of ordinary skill in the art at the time of the invention to substitute the resonators of Aigner into the combustor of Benz as a matter of obvious design choice, as taught by Aigner. Benz teaches that the resonators arranged such that the neck is angled approximately 90 degrees with respect to a direction of the combustion gases (see fig 4).

Regarding claim 10:

Benz teaches more than one resonator (Fig 5 shows three resonators), the resonators mounted circumferentially in positions asymmetrical to one another in both a radial and axial direction (Fig 4; the three resonators are located at different axial and radial locations with respect to an axis of symmetry) and are hydraulically connected to a downstream portion of the combustion chamber (the section shown in Fig 4 can be considered a downstream portion). Benz fails to teach more than one burner. However, combustors with multiple burners was well known in the art, as taught by Aigner (see Fig 1, shows 2 burners). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the combustor of Benz with more than one burner as a matter of obvious design choice, as taught by Aigner.

6. Claims 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2004/0248053 to Benz et al (Benz) in view of US 5,373,695 to Aigner et al (Aigner) as applied to claim 2 above, and further in view of US Patent 6,530,221 to Sattinger et al (Sattinger).

Regarding claims 3-6:

Art Unit: 3741

Benz in view of Aigner fails to teach a plurality of the cooling holes. However, it was known in the art, as taught by Sattinger, to provide resonators with a plurality of cooling holes in the resonator casing in order to provide additional air (57; Fig 5c). It would have been obvious to one of ordinary skill in the art at the time of the invention to substitute the single cooling hole of Benz/Aigner with the plurality of cooling holes of Sattinger in order to provide additional cooling/purge air to the resonator, as taught by Sattinger. Sattinger further teaches the holes arranged asymmetrically. The axis (to determine symmetry) can be at an angle, or offset from the middle of the plate (since the claim has not defined the axis), which would make the holes asymmetric to each other. Benz further teaches a volume adjuster (11) that varies the pre-set volume of the resonator (para 41).

Allowable Subject Matter

7. Claim 7 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and if the other claim objections are overcome.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 7:

The prior art fails to teach a Helmholtz resonator that is mounted on a gas turbine combustor wall, that has two tubular bodies with concavities facing one another, and that is telescopically adjusted using screw threads between the bodies. Stalder teaches

Art Unit: 3741

using screw threads to adjust the volume but does not disclose the two cup shaped tubular bodies with concavities facing one another nor the fixing ring nut. JP 51-014550 (JP51) teaches an acoustic suppression device that uses two cup-shaped bodies facing one another, but it would not have been obvious to combine the references because JP51's device is not a Helmholtz resonator. The suppression device of JP51 completely surrounds the main flow path instead of being connected to it via a neck, as in a Helmholtz resonator. Neither of the references teaches a threaded fixing ring nut that is coupled to the cup-shaped body that is provided in a single piece with the neck.

Response to Arguments

8. Applicant's arguments with respect to claims 1-10 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANDREW NGUYEN whose telephone number is (571)270-5063. The examiner can normally be reached on 8 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cuff can be reached on (571)-272-6778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3741

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/AN/

/Michael Cuff/
Supervisory Patent Examiner, Art Unit 3741